RENEWABLE ENERGY

Air Force Blue Turns Green

The United States Air Force is known for its high-tech assets—aircraft flying faster than the speed of sound, satellites beaming back crisp photos from outer space, and pinpoint accurate subsonic cruise missiles. More recently, the Air Force has been quickly gaining notoriety for cutting-edge solutions in helping to reduce our country's dependence on foreign energy sources and efforts to preserve our environment. Since 1985 the Air Force has significantly reduced facility energy by incorporating energy conservation practices into every airman's daily life. For more than 10 years the Air Force has been expanding energy conservation efforts and investing in renewable energy sources.

Nearly 10% of all Air Force electric usage purchases are from renewable sources. By locking in long-term green power contracts at today's fixed prices, the Air Force is helping to ensure reasonably priced utility rates in the future.

More than 86,000 vehicles and many thousands of pieces of support equipment rely on petroleum-based fuels. The Air Force continues to research, test, and convert vehicles and equipment to run on a variety of alternative fuels. The goal is to reduce fossil fuel consumption 2% each year while increasing greater use of alternative fuels by 10% annually.

Utilizing Power from the Sun and the Earth

The Air Force has several on-base solar, wind, and biomass projects in operation and several more are under consideration. Solar power is by far the largest contributor in the Air Force's renewable energy development program, with a 14 MW photovoltaic array that became operational in December 2007. It is the largest in the Americas. The Air Force has several proposals to partner with industry to explore additional renewable energy development.

The largest photovoltaic array in the Americas became operational at Nellis Air Force Base, Nevada in December 2007.

(U.S. Air Force photo)

Airman 1st Class Heather Coffman recharges a new Miles ZX40 all-electric vehicle. *(U.S. Air Force photo by Staff Sgt. April Quintanilla)*

Electric-powered pick-ups and forklifts are in use on Air Force bases today. New technologies such as advanced lithium ion batteries and improved electric motors, will provide even greater performance and reliability in the future. These advanced batteries, coupled with fuel cell technology and hybrid systems, will help extend the performance and range of the vehicles and help the Air Force further reduce oil consumption.

Synthetic fuels are an integral part of the Air Force's overall green power strategy. Some of these fuels, ethanol and methanol, are in use today. The Air Force is working with industry and academia to develop additional synthetic fuels such as fuels made from liquefied coal. Synthetic fuels from biomass, including agricultural and wood products, will provide additional renewable fuels availability.

Powering Vehicles and Equipment

The Air Force began looking at alternative-fuel vehicles in 1992 and began working with automobile manufacturers and equipment suppliers to find the right combination of reliability, performance, and cost. At the time, several technologies were evaluated, but none were ready for operational use.

As industry continued to improve the performance of alternative-fuel vehicles, the Air Force began to utilize them. The newest alternative energy vehicles are hybrid systems that use multiple power sources and synthetic fuels.

The Air Force is also working with industry to develop alternative-fuel technology to support ground equipment and facilities such as bare base assets and modular mobile units. These projects are advancing hydrogen generation, storage and refueling capabilities, and helping to increase fuel efficiency.

Path Forward

No single alternative energy source is the answer. The Air Force recognizes that it will take a combination of diverse resources to meet its vast energy needs.

It continues to be a balancing act. Energy managers work to minimize energy consumption and cost without sacrificing mission objectives and continuing to provide quality working and living conditions.

The Air Force has long been a leader in the federal government in energy conservation and plans to aggressively integrate advanced energy technologies into day-to-day operations. Not only does it make good economic sense, but it also helps maintain mission readiness while meeting quality-of-life requirements that support all Airmen.